CLAIMS

1. Traction chain for an automobile vehicle, comprising:
   - a wheel support which carries a rotating hub designed to receive a drive wheel and having a rotation axis for the said drive wheel,
   - a rotating toothed wheel having a rotation axis the same as that of the said drive wheel, the toothed wheel meshing directly with the hub,
   - an arrangement comprising at least two gear-wheels which are permanently meshed with the said toothed wheel, comprising an input shaft designed to be coupled with the shaft of an electric motor, and comprising a gear ratio change mechanism with a neutral position between gear ratios, the said mechanism comprising direct engagement between the input shaft and one of the gear-wheels, the said mechanism comprising, between the input shaft and the other gear-wheel, at least one other mechanical transmission path with a reduction ratio different from that of the direct engagement.

2. Traction chain according to Claim 1, in which the gear ratio change mechanism comprises a dog clutch which enables one or other of the gear ratios to be selected.

3. Traction chain according to Claim 1, in which in the said other mechanical transmission path, the dog clutch moves the toothed wheel via an intermediate gear-wheel which enables the rotation speed to be inverted.

4. Traction chain according to Claim 1, in which in the said other mechanical transmission path, the dog clutch moves the wheel directly without any intermediate gear-wheel.

5. Traction chain according to Claim 1, in which it has no friction clutch.

6. Traction chain according to Claim 1, in which it has only two gear ratios.

7. Traction chain according to Claim 1, in which it comprises an electric motor, the said motor being of the synchronous, self-adjusting type, the motor comprising at least one integrated rotor position sensor used to control the motor.

8. Traction chain according to Claim 7, in which the only sensors used to determine the wheel rotation speed are the said position sensor integrated in the motor and a sensor aggregate associated with the gear ratio change mechanism.

9. Process for controlling gear ratio changes in a vehicle having at least two drive wheels each equipped with a traction chain according to Claim 7, in which the gear ratio changes at the two drive wheels are offset in time: in an initial phase, a gear ratio change is effected in a wheel said to be the "maneuvered" wheel, the vehicle speed being calculated by the traction electronics from information about the traction motor speed and the currently engaged gear ratio at the other wheel, said to be the "sensor wheel", and then, in a subsequent phase, a gear ratio change is effected in said other wheel.

10. Process for controlling gear ratio changes according to Claim 9, for a vehicle with at least four drive wheels on two axles, vehicle in which at least one sensor wheel is located on one of the axles, the maneuvered wheels being on the other axle during the initial phase, and the location of the "sensor" and "maneuvered" wheels is inverted during the subsequent phase.

11. Process according to either of Claims 9, in which the gear ratio change procedure is blocked in the event of braking more violent than a predetermined threshold.

12. Process according to Claim 9 in which, during the gear ratio change procedure, locking or skidding of the sensor wheel is detected and, as the "vehicle speed" information, the last datum calculated which is deemed reliable is used.

13. Process according to Claim 9 in which, during the gear ratio change procedure, locking or skidding of the sensor wheel is detected and the maneuvered wheel remains in neutral until the speed of the sensor wheel has returned to a reliable value.

14. Process according to Claim 10 which uses two sensor wheels on an axle, in which during the gear ratio change procedure, locking or skidding of one sensor wheel is detected and the speed information is worked out from the other wheel on the sensor axle.

15. Process according to Claim 10 which uses two sensor wheels on an axle, in which during the gear ratio change procedure the locking or skidding of the two sensor wheels is detected and, as the "vehicle speed" information, the last datum calculated which is deemed reliable is used.

16. Process according to Claim 10 which uses two sensor wheels on an axle, in which during the gear ratio change procedure the locking or skidding of the two sensor wheels is detected and the maneuvered wheels remain in neutral until the speed of at least one wheel on the sensor axle has returned to a reliable value.